

**MISCOPHUS BICOLOR JURINE (HYMENOPTERA:
CRABRONIDAE), A WASP NEW TO BRITAIN**

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ABSTRACT

Richards (1980) includes only two species of sphecid wasp within the genus *Miscophus* as having been recorded from the British Isles. This paper records a third, *M. bicolor* Jurine, as new to the British list. A key to allow for the separation of the three British species is presented.

MISCOPHUS BICOLOR JURINE, 1807, IN BRITAIN

During the summer of 2003, A. Knowles paid a series of visits to Maudsross Hill Site of Special Scientific Interest (SSSI), vice county West Suffolk, at the request of Forest Heath District Council, to gather base-line data on the aculeate Hymenoptera to be found there. Maudsross Hill is a renowned botanical site located at Ordnance Survey grid reference TL 7282 adjacent to Lakenheath village and the American airbase at RAF Lakenheath. The site comprises a gravel-topped hill, with chalk coming to the surface in places, as is typical in the Brecks. It supports many Breckland grassland specialities, such as the plants Sand Catchfly *Silene conica*, Spanish Catchfly *S. otites*, Sand Cat's-tail *Phleum arenarium* and Wild Grape Hyacinth *Muscari neglectum*. Many of these plants grow on hummocky, sparsely vegetated ground associated with old gravel-extraction operations, providing conditions that ought to also favour ground-nesting aculeate Hymenoptera.

The most threatened British insects were originally listed in a national Red Data Book (usually shortened to RDB) by Shirt (1987), noting species as being Endangered (RDB1), Vulnerable (RDB2) or Rare (RDB3). Revisions to the statuses of the Hymenoptera were subsequently proposed by Falk (1991), including assessments of less threatened Nationally Scarce species. Preliminary results from this present survey suggest that a diverse and important aculeate fauna does indeed exist at Maudsross Hill, with records for several such Red Data Book or Nationally Scarce species, namely:

Chrysis gracillima Förster, Red Data Book category 2 (Vulnerable), a new county record.

Andrena alfenella R.C.L. Perkins, RDB3 (Rare).

Cerceris quinquefasciata (Rossi), RDB3 (Rare); a national Biodiversity Action Plan species and a subject of English Nature's Species Recovery Programme.

Halictus confusus Smith, RDB3 (Rare).

Colletes marginatus F. Smith, listed as RDB3 (Rare) in Shirt (1987) but proposed as Nationally Scarce (Na) in Falk (1991).

Oxybelus argentatus Curtis, proposed as Nationally Scarce (Na) (Falk, 1991).

Megachile dorsalis Pérez and *Osmia bicolor* (Schrank), both proposed Nationally Scarce (Nb) (Falk, 1991).

On 9 July 2003 numerous aculeates were collected, including material from temporary pan traps. Not until the specimens were taken away for determination was it seen that the catch included a large female *Miscophus* with prominent orange-red markings on the gaster. Reference to Richards (1980) indicated that the only British *Miscophus* in which the female has red abdominal segments is *M. concolor* Dahlbom, but the specimen clearly did not match this species in terms of size, the extent of red on the abdomen, wing venation and also details of propodeal sculpturing. The specimen was suggested to be *Miscophus bicolor* Jurine by P. Harvey, a view which was supported by G.R. Else at the Natural History Museum, London (NHML) and finally confirmed by Professor S. Gayubo of the University of Salamanca in Spain, to whom our thanks are due.

CHECKLIST OF THE BRITISH SPECIES OF *MISCOPHUS*

The following checklist provides a revision to that given in Richards (1980).

Miscophus Jurine, 1807

ater Lepeletier, 1845

maritimus, F. Smith, 1858

bicolor Jurine, 1807

concolor Dahlbom, 1844

bicolor, F. Smith, 1858 misident.

IDENTIFICATION OF *MISCOPHUS BICOLOR*

Superficially, both sexes of *M. bicolor* show similarities to *M. concolor* females, in that the gaster has a greater or lesser degree of orange/red coloration, whereas the gaster of *M. concolor* males is generally at best orange-brown or even only orange-brown marked basally. In *M. ater* Lepeletier the gaster is entirely black in both sexes. However, *M. bicolor* is generally larger than *M. concolor* and there are differences in the proportions of the size of the second cubital cell in relation to its petiole and also in the sculpturing of the dorsal surface of the propodeum. Bitsch *et al.* (2001) separate *M. concolor* from *M. bicolor* (along with other species not found in Britain) using several characters, including differences in the puncturation of the mesopleuron but reference to the collection of these species held at the NHML suggested that this feature was difficult to discern and discriminate between, especially with poorly mounted or old specimens. Dollfuss (1991) also uses this mesopleuron character, along with the relative length of the petiole of the second submarginal cell in relation to the height of that cell. Differences in the sculpturing of the dorsal surface of the propodeum are also noted. Examination of the material at the NHML suggests that the submarginal cell and its petiole is a reliable character, even though the precise ratio between the two is quite variable and care needs to be taken to examine both wings. However, for the British species, the sculpturing of the dorsum of the propodeum is suggested as a clear and easy discriminator between *M. concolor* and *M. bicolor*.

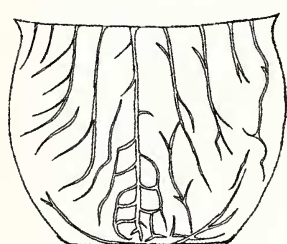
The following is presented as a key for the British species of *Miscophus*, based on the material held at the NHML. Characters for *M. bicolor* females are taken from the Lakenheath specimen, but confirmation of these characters, and also those for males, is based upon continental material, mainly from France, Israel and Eastern Europe. The authors would welcome comments based on reference collections elsewhere in the country, particularly concerning other specimens of *M. bicolor* that might have gone previously unnoticed.

- 1 Females 2
- Males 4

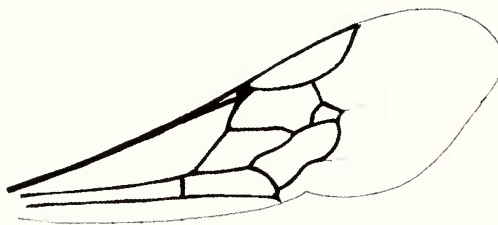
- 2 All gastral tergites black **ater**
- At least first gastral tergite orange-red 3

- 3 Dorsal surface of propodeum with slightly oblique but essentially longitudinal ridges predominating, occasionally with weak lateral branches (Fig. 1a). Petiole of second submarginal generally roughly equal to, or slightly longer than, the height of the cell (Fig. 1b) (check both wings). First, and usually the second gastral tergites, orange-red in colour **concolor**
- Dorsal surface of propodeum with strong transverse or widely oblique ridges, with short, irregular but strong lateral branches, giving an overall coarse reticulate appearance (Fig. 1c). Petiole of second submarginal usually distinctly shorter than the height of the cell (Fig. 1d). First three and occasionally the fourth gastral tergites marked with orange-red **bicolor**

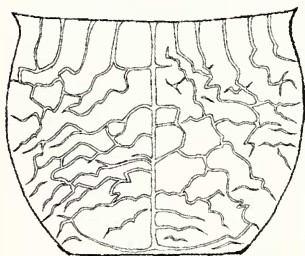
- 4 First two (and occasionally third) gastral tergites distinctly orange-red **bicolor**
- At most, the first gastral tergite orange-brown, occasionally only thus coloured at the base close to the gaster articulation with the propodeum. Otherwise, gaster entirely black 5



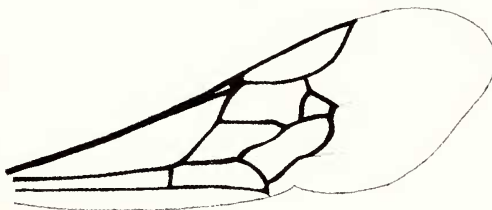
(a)



(b)



(c)



(d)

Figure 1. (a) *Miscophus concolor* ♀, propodeal dorsum; (b) *Miscophus concolor* ♀, venation of forewing, showing long petiole of second submarginal cell; (c) *Miscophus bicolor* ♀, propodeal dorsum; (d) *Miscophus bicolor* ♀, venation of forewing; note shorter petiole of second submarginal cell.

- 5 Gaster entirely black. [Upper frons surrounding and in front of the anterior ocellus very densely punctate so that they are generally separated by ridges, with faintly reticulate interstices]. **ater**
- Gaster often with some orange-brown coloration on the first tergite, although this may be much reduced. [Upper frons surrounding and in front of anterior ocellus less densely punctate, so that the punctures are separated by narrow but distinctly flattened, smooth and shiny interstices] **concolor**

EUROPEAN CONTEXT

The NHML has specimens of *M. bicolor* from France, Spain, Austria, Switzerland, Greece, Cyprus, Israel, Turkey, Bulgaria and Sicily. Bitsch *et al.* (2001) add Iran, Syria and Kazakhstan, whilst Dollfuss (1991) notes its presence also in north Africa, from Algeria. Bitsch *et al.* show the species to be quite widely distributed across France, but it would appear that this species is, if native to Britain, at the extreme northwestern edge of its range in Europe.

ADDENDUM

On July 12th 2005 Adrian Knowles re-visited Maidscross Hill in an attempt to establish whether or not the wasp was still present on the site. Using small yellow plate pan-traps and hand-netting it soon became apparent that a healthy and widespread population was present, with 13 males and 3 females being collected in only 2 hours, with many more individuals being seen but not taken. It would therefore appear that this wasp is at the very least well established if not a long-overlooked native species.

It appeared to favour moderately steep (at least 45 degree) slopes with a southerly aspect and sparse vegetation cover, principally Sheep's Sorrel *Rumex acetosella* and small tufts of grasses. The majority of the specimens observed were males, moving over the ground in a rather agitated manner, rather reminiscent of a pompilid wasp, although readily taking to the air when disturbed.

ACKNOWLEDGEMENTS

The authors would like to thank Professor S.F. Gayubo of Salamanca, Spain for confirming the identity of the specimen and also B. Pinchen for providing the illustrations.

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